

CHARGE NUMBER: 6908
PROGRAM TITLE: SMOKE CONDENSATE STUDIES
PERIOD COVERED: SEPTEMBER 1 - 30, 1985
PROJECT LEADER: R. D. KINSER
DATE OF REPORT: OCTOBER 8, 1985
WRITTEN BY: S. A. HAUT

I. NITROSAMINES

It has been observed that the standard deviation of GC/TEA data is greater when smoking experiments are performed using 5 cigarettes compared to 30 cigarettes. The major parameter differences between the two are the purge gas used (air vs. nitrogen), smoke collection time (50 min vs. 20 min), and the number of cigarettes (5 vs. 30). Experiments have been initiated to determine what effects these variables have on the results generated in each instance [1].

Several cigarette blends designed to give reduced TSNA delivery were evaluated. The blends consisted of mixtures of bright, burley, oriental, ES, Virginia sun cured, dark air cured, and low alkaloid tobaccos. The results indicate that those blends containing low alkaloid components yielded lowered filler and mainstream TSNA levels [2]. These results are consistent with those obtained previously for hand-blended cigarettes [3].

Oriental tobacco has been shown to undergo no measurable pyrosynthesis of TSNA during smoking. Oriental X6D4BWA, with TSNA added in amounts equivalent to burley levels, was oversprayed with 3,4-dihydroxyhydrocinnamic acid (one of the polyphenolic compounds found to be active in reducing mainstream TSNA delivery) and smoked this month. One would expect to see no effect on the treated material relative to TSNA-added BWA control if this antioxidant's mode of TSNA inhibition is solely involved with the pyrosynthetic process (and if no alteration in the tobacco's burning characteristics occur). The result of the experiment indicates that there was, in fact, some transfer interference since the levels with added antioxidant are as low as 65% of control. It is possible that the added antioxidant changed the burning character or complexed with the nitrosamines, either destroying them entirely or changing their smoke transfer abilities [4].

Two experiments have been conducted to determine if rosemary oil or solanesol has an effect on MS TSNA levels. Whole rosemary oil was previously shown to have no significant effect on TSNA delivery. Fractions of rosemary oil have been prepared by vacuum distillation and crystallization. If any rosemary oil components are capable of reducing TSNA levels, this activity should be more easily determined in smoking experiments using the more concen-

2001116433

trated fractions. Pure solanesol added to X6D4BVY burley yielded no significant difference from control in MS smoke TSNA levels, suggesting that tobacco waxes may not participate in TSNA formation [4].

II. PAHs


Work has been completed on the semi-micro column procedure for PAH-III analysis. The first step of this procedure circumvents the the problems encountered in activating prep-TLC plates. A small silica gel column is used to prepare PAH-I instead of preparative TLC. Four satisfactory replicates of the method have been obtained [5].

III. MAINSTREAM SMOKE STUDIES

Cigarettes were handmade from lyophilized green Coker 319 tobacco and cured Coker 319 tobacco. Mainstream smoke was collected from these cigarettes for testing in the Salmonella/microsome (S/M) assay. Handmade cigarettes were also prepared from six deproteinized burley fillers and a DBC burley control submitted by Dr. W. Hempfling. Weight and RTD selected cigarettes were smoked to yield MS samples for testing in the S/M assay. In a separate experiment, MS was collected from these cigarettes for water analyses [6].

IV. REFERENCES

1. Morgan, W. R. Notebook No.8218, p. 83-85.
2. Lambert, E. A. Notebook No. 8240, p. 16-18.
3. Tafur, S.; Lambert, E. Tobacco Specific Nitrosamine (TSNA) Analysis of MS Smoke from an Experimental Tobacco Blend Designed to Deliver Adequate Nicotine and Reduced TSNA. Memo to Dr. E. B. Sanders; 1985, April 1.
4. Haut, S. A. Notebook No. 8167, p. 153-155.
5. Levins, R. J. Notebook No. 8109, p. 197-198.
6. Hellams, R. D. Notebook No. 8456, p. 200.



2001116434